We are using the American-Malay kite with no alteration except in method of construction, this type being more efficient in our hands than the box kite, and has the advantage of being more portable. During this year the only loss we have sustained has been the breaking away from the main line of one 7-foot kite, and flights have been made under all possible conditions, from the blizzard of February 12, 1899, to the sudden thunderstorms of midsummer.

In order to obtain the greatest possible altitude with the smallest amount of wire, it has been found that tandem lines should be bunched at the top of the main line in what we have termed the "bouquet" system. If kites are placed at intervals along the main line, the head of the line will not attain more than two-thirds the altitude reached by the bouquet system. Thus with 4,500 feet of wire the bouquet system reached an altitude of 2,785 feet.

For some months we have been using a carrier system on our main line. This has been a matter of experiment with us for three years back. By its use, we are now taking records every hour or half hour during ascensions, which is especially interesting for night work. We hope thus to take records from sunset to sunrise. In this carrier system, we first establish one line up to the altitude at which we wish to work; then a second line is sent up with one or two small kites to about 300 feet. This second line is attached to the carrier car, which is placed on the main wire. This car has two grooved wheels resting on the wire and two below that are trollies and are held closely to the wire from the under side, by means of strong elastic bands. Thus the carrier is held to the main wire under all circumstances. The Six's thermometer is then suspended under the car, the trailing line is attached, and the supplemental kites take the car rapidly up the main line with great steadiness. In a wind of 12 miles per hour we can, with one 6-foot towing kite, send a thermometer up 1,000 feet in two minutes and can bring the thermometer back for record in about the same time. This system is far superior to using halyards since much higher altitudes can be attained and there is no depression of the main line. We are using this system for all forms of kite work; thus we take a dozen photographic views while one is being taken by the old system.

For records of temperature we will shortly have in the service a thermograph designed by Mr. H. Norton Lay, of Bayonne, that will give us a continuous record. It may not be so convenient as a Richard, but can be constructed for one-tenth the cost.

Our work is done in a suburban city that is rapidly building up, and large vacant lots are not so easily secured. We are on the end of a peninsula and our kites are as often over water as over land; northerly winds and 5,000 feet of wire let out will place our kites across the Kill Van Kull and over Staten Island.

TABLE 1.—*Kite ascensions made at Bergen Point, Bayonne, N. J., by the Bayonne kite corps.*

Number.	Ascension. Date.	Ascension. P. M. Began.	Ascension. P. M. Ended.	Kite record. Altitude.	Kite record. Temperature. Max.	Kite record. Temperature. Min.	Local conditions. Temperature. Beginning.	Local conditions. Temperature. Ending.	Local conditions. Wind.	Local conditions. Sky.	New York. Temperature. Beginning.	New York. Temperature. Ending.	New York. Winds during ascensions. Direction.	New York. Winds during ascensions. Velocity.	Average daily temperature at the Bergen Point (Bayonne) station.[e] Same day.	Second day.	Third day.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		H. M.	H. M.	Feet.	°	°	°	°			°	°		Miles.	°	°	°
91	July 15, 1899	8 20	9 30	400[a]	73	74	73	73	sw.	Cloudy.	74	73	s.	14	75	79	79
92	July 22, 1899	8 12	9 20	600	73	68	73	71	ne.	Partly cloudy.	74	72	ne.	20	83.5	60.5	66
93	August 12, 1899	8 20	9 30	1,124	71	69	71	68	se.	Cloudy.	73	71	se.	9	73	78.5	70
94	August 19, 1899	8 30	10 00	918	75	74	75	74	ne.	Cloudy.	74	72	e.	4	75.5	78	81.5
95	August 28, 1899	8 15	9 45	750	66	61	66	62	nne.	Clear.	69	69	se.	8	70.5	69	70.5
96	September 7, 1899	8 35	10 00	1,850	65	58	65	60	se.	Clear.	66	65	s.	15	64	74	70
97	September 9, 1899	8 45	10 30	1,580	69	66	69	67	nw.	Clear.	71	70	n.	6	70	65	64
98	September 13, 1899	8 26	9 50	1,652	62	58	62	60	nw.	Clear.	64	63	w.	7	66.5	57.5	58
99	September 14, 1899	9 05	10 15	1,080	56	53	56	54	nw.	Clear.	57	55	nw.	11	57.5	58	60
100	September 15, 1899	8 37	10 16	1,100	59	53	59	56	nw.	Clear.	64	62	e.	8	58	60	63
101	September 16, 1899	8 20	10 30	1,791	58	52	58	55	se.	Partly cloudy.	62	62	s.	9	60	63	65.5
102	September 25, 1899	8 33	9 53	1,005	70	67	70	69	se.	Cloudy.	69	69	se.	25	70	69	54
103	October 4, 1899	8 35	10 12	1,093	56	51	56	54	sw.	Clear.	56	54	sw.	8	52	57	56.5
104	October 7, 1899	8 26	10 16	1,972	53	48	53	50	nw.	Clear.	59	57	ne.	10	56.5	54	55.5
105	October 16, 1899	8 10	9 50	1,350	59	51	59	57	ne.	Cloudy.	62	62	e.	10	60	64.5	72
106	October 25, 1899	8 25	9 45	993	60	57	60	59	sw.	Partly cloudy.	64	63	sw.	8	61	62	64
107	October 28, 1899	9 00	9 15	500	66	65	66	66	ssw.	Cloudy.	64	64	s.	19	62.5	63	53.5
108	November 7, 1899	3 30	4 10	250[a]	55	54	55	55	wsw.	Clear.	52	52	w.	8	45	48.5	51
109	November 14, 1899	8 30	9 30	550[a]	33	30	33	32	ne.	Cloudy (rain).	36	35	ne.	12	35.5	40	49.5
110	November 20, 1899	8 15	9 35	640	40	37	40	39	nw.	Clear.	41	39	nw.	13	47	42.5	47.5
111	November 22, 1899	8 32	9 50	890	52	49	52	50	sw.	Cloudy.	53	53	nw.	13	47.5	45.5	42
112	November 28, 1899	8 12	10 05	2,100	43	36	43	41	sw.	Partly cloudy.	46	45	s.	9	42	45	47.5
113	December 2, 1899	9 40	10 22	450	41	41	41	39	wsw.	Clear.	45	44	w.	8	44.5	47	40.5
114	December 11, 1899	8 35	10 20	1,975	54	48	54	51	w. by n.	Partly cloudy.	54	54	s.	34	50	57.5	47.5
115	December 14, 1899	8 25	9 30	680	40	37	40	39	s.	Partly cloudy.	41	41	e.	12	38.5	39	28.5
116	December 15, 1899	8 40	9 55	575	30	27	30	29	nw.	Clear.	29	27	nw.	30	39	28.5	33.5
117	December 18, 1899	8 15	9 35	734	40	37	40	39	sse.	Cloudy.	44	45	s.	6	40	47	38.5
118	December 19, 1899	7 30	12 15[d]	2,000	41	30	41	36	nw.	Cloudy.	41	37	w.	27	47	38.5	39
a	do	8 00		1,000		37	40				41		w.	22			
b	do	9 00		1,000		35	39				41		w.	31			
c	do	10 00		1,000		35	38				40		nw.	33			
d	do	11 00		1,000		33	38				38		w.	30			
e	do	12 00[c]		1,000		36	36				37		n.	21			
119	December 23, 1899	8 42	10 05	500	45	44	44	44	sse.	Cloudy.	45[f]	45[f]	e.	18	41	50.5	29.5
120	December 27, 1899	8 27	9 55	1,010	26	22	26	24	wsw.	Cloudy (snow).	26	25	w.	13	25.5	25	22.5
a	do	8 45	9 00[b]	500	26	24			wsw.		26	26	nw.	12			
121	December 30, 1899	8 23	10 50	2,097	12	7	12	10	nw.	Clear.	12	12	nw.	16	13	15	21.5

[a] The only ascensions where cord was used; piano wire used for all others. [b] Carrier car used; two thermometers. [c] Midnight. [d] A. M. [e] Mr. Willard W. Hotchkins. [f] Approximated.

The temperatures and winds at New York are furnished by Prof. A. J. Henry from continuous registers by Weather Bureau instruments at elevations of 120 and 360 feet, respectively, above sea level.

NOTES BY THE EDITOR.

CLIMATOLOGY OF ST. KITTS.

In the article on the above subject by Mr. William H. Alexander, published in the MONTHLY WEATHER REVIEW, Annual Summary, 1899, page 583, the mean temperatures and pressures are given without special information as to the hours of observation. In reply to a letter of inquiry from the Editor, Mr. Alexander reports as follows:

Local time was used throughout, but the hours varied. That is, the hours of observation were the same during the year, but were not the same for all the years. To be more specific:

In 1856 the barometer was read at 10 a. m. and the thermometer at 8 a. m., 12 noon, and 4 p. m. In getting the mean barometer the 10 o'clock readings were added and divided by the number of days in the month. The temperature mean was obtained by adding the 8 a. m. and the 4 p. m. readings and dividing the sum by twice the number of days in the month. The noon reading was ignored.

In 1857 the barometer was read at 10 a. m. and the mean obtained as explained above. Only the maximum and minimum temperatures were recorded during this year, and the mean was obtained by dividing by two the sum of the mean maximum and the mean minimum.

From 1858 to 1867, inclusive, the barometer and thermometer were read at the same hours, viz, 8 a. m., 12 noon, and 4 p. m. The means were obtained as explained under 1856 relative to temperature mean.

In 1868 the barometer and thermometer were read at 10 a. m. and 2

p. m., and the means were obtained by dividing the sum of the readings by twice the number of days in the month.

In 1869–1882, inclusive, both instruments were read at 9 a. m. and 2 p. m., and the mean obtained as just explained.

In 1892–93–94 readings were made at 10 a. m. and 3 p. m., and means obtained in the same manner as from the 9 a. m. and 2 p. m. readings.

In 1895–96–97 and to August, 1898, the readings were made at 9 a. m. and 3 p. m., and the means obtained as above explained. Subsequent readings were those of the United States Weather Bureau, and the time is known.

In regard to the hours suggested in the text, viz, 9 a. m. and 4 p. m., I will say that at the time I wrote I thought that those hours would give a good average temperature, but it now appears that 4 p. m. was a little too late; perhaps it would be more nearly correct to say 9 a. m. and 3 p. m.

METEOROLOGY IN ECUADOR.

A letter from the Director of the Meteorological Observatory of the National College, San Vincente of Guayas, located at Guayaquil, Ecuador, informs Professor Moore that on November 27, 1899, the college observatory and printing office were totally destroyed by fire. Therefore, for the present the publication of the monthly bulletin of the observatory must be interrupted. The new buildings are already in process of construction and will be occupied even before they are finished, so that both the observations and the bulletin will be resumed as soon as possible.

The Chief of the Weather Bureau expresses to the director his sympathy in this great loss and his admiration of the energy with which the damage is being repaired.

LECTURES AT FARMERS' INSTITUTES.

On February 21, Mr. Frank P. Chaffee, Section Director at Montgomery, Ala., by authority of the Chief of the Weather Bureau, attended the Negro Farmers' Conference held under the auspices of the Institute at Tuskegee, Ala. According to Mr. Chaffee's report it is estimated that fully 3,000 people attended the meeting, of whom about 800 were farmers, and many were owners of large tracts of land. They were mostly from Alabama, but twenty other States were represented, and Mr. Chaffee adds that "the meeting was one of the most enthusiastic and beneficial of its kind I have ever attended." Prof. Booker T. Washington presided over the Conference, and many topics of interest to the farmer were discussed. Professor Washington, after alluding to the good work the Weather Bureau is doing for the agricultural interests, and expressing his appreciation of the courtesy of the Chief of the Bureau in allowing one of its officials to attend the meeting, introduced Mr. Chaffee, who delivered an address, in the course of which he said:

It is Professor Moore's special desire that the Weather Bureau shall be made of the greatest practical benefit to the farmers, and he has, therefore, delegated me to come here to explain some of the ways in which this can be done. If there is any one class on which the country depends for its prosperity more than another, it is the farmer and planter—not the man of antiquated ideas and methods, who plants corn year after year on the same ground, merely because his father and his father's father did so, but the up-to-date, progressive farmer who diversifies his crops, and exercises the same degree of intelligence in his business as does the merchant, the mechanic, or any other worker. It is only in recent years that this branch of industry has commanded so much attention from the thinkers of the country, and only within the last decade that it has been the focus of so much intelligent thought.

The work of the Agricultural Department is so broad as to embrace every line of scientific research which can be made of practical benefit to the farmers. Some of its specialists analyze the soil, and determine what plant life is best adapted to it. Others investigate the storage of ground-water, the most economical methods of irrigation, the methods for preventing the spread of cattle diseases, and everything pertaining to the improvement of live stock. The Department also has its agents searching everywhere for new varieties of plants and seeds which can be domesticated with advantage and profit, while its thorough system of experiment stations brings before the farmer object lessons in the practical use of the intelligence thus accumulated.

You are all aware of the importance of knowing at some critical time in your work just what the weather will be to-morrow. To tell you this is the specific purpose of the Weather Bureau, and when it has spent money—*your money*—to place this intelligence before you, and you do not use it, then the loss and the blame are yours. If it be true, as claimed, that the farmers of the North and West are more successful than the farmers of the South, it is certainly not because their soil is any more fertile or their climate any more favorable. It is true, however, that they keep in intelligent touch with every source of information and are specially attentive to the forecasts and warnings of the Weather Bureau. A farming community in the Ohio Valley without the daily weather forecasts is almost unknown.

While it is true that occasionally the forecasts are not verified, still they are certainly the best obtainable information on the subject. Should you one time in ten prepare for a cold wave or frost that does not come, the very small expense thus incurred will be offset a thousand fold by the benefit derived from the other nine warnings. These forecasts are not the vague guessing of any benighted soothsayer or astrologer, but are the result of intelligent and prolonged scientific research and experience in correlating the daily weather changes of this country. In order that you may appreciate the thorough system by which the forecasts are brought directly to your knowledge, I propose to briefly review the manner in which the Weather Bureau collects its reports and makes and distributes its forecasts and warnings.

Mr. Chaffee then outlined in plain language the work of the Bureau as to distribution and instrumental equipment of stations, the complete system of collecting telegraphic reports, how the reports are charted and the forecasts of storms, cold waves, etc., made, and the method of quickly placing the information before the public. He explained the great benefit the recent flood warnings of the Bureau were to the farmers along the Alabama and Coosa rivers, and dwelt upon some of the best means of protecting crops from frosts. All were advised when they returned home to inquire for the daily forecasts that should be received at their post-offices, and that they will be furnished if the postmaster applies for them. Attention was directed to the value of the weekly climate and crop bulletins, the value of the work of the voluntary observers, and the importance of Weather Bureau records in cases where suit is brought for damage done by the weather.

On February 6, Mr. Charles E. Linney, Section Director for Illinois, delivered an address at Geneva, Ill., before the Farmers' Institute of Kane County, on the Weather Bureau and its work with special reference to agricultural conditions. By means of three large weather maps he showed the progress of storms, the methods of forecasting and by special maps for Illinois showed the location and number of voluntary observers and forecast displaymen. After talking thirty minutes he invited questions from the audience and the queries occupied about twenty minutes more. Some of those in the audience came to talk personally with Mr. Linney after the address was over. Many of these were voluntary observers and solicited special instructions relative to their instruments and records. Mr. Linney was followed by Mr. James Riley, of Thornton, Ind., with an address on culture of corn. He prefaced his remarks with a splendid indorsement of the work of the Bureau, giving half a dozen instances in which he had made valuable saving of time, seed, and crops by the use of the Weather Bureau forecasts.

A CHANGE AT KEW OBSERVATORY.

A circular, signed by R. T. Glazebrook, has been received by the Chief of the Weather Bureau announcing that the Kew Observatory, which has been famous in science for a hundred years, is to be hereafter known as the National Physical Laboratory, old Deer Park, Richmond, Surrey, England. At the request, and with the support of Her Majesty's Government, the National Physical Laboratory has been es-